DATASHEET - LZMC1-A160-I

Circuit-breaker, 3 p, 160A

Part no. LZMC1-A160-I
Catalog No. 111897

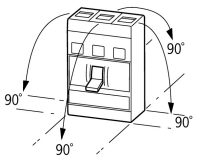
Powering Business Worldwide™

Delivery program

Product range			Circuit-breaker
Protective function			System and cable protection
Standard/Approval			IEC
Installation type			Fixed
Release system			Thermomagnetic release
Construction size			LZM1
Number of poles			3 pole
Standard equipment			Box terminal
Switching capacity			
400/415 V 50 Hz	I_{cu}	kA	36
Rated current = rated uninterrupted current			
Rated current = rated uninterrupted current	$I_n = I_u$	A	160
Setting range			
Overload trip			
	I_r	A	125 - 160
Short-circuit releases 			
Non-delayed 	$I_i = I_n$ x …		1280 A fixed

Technical data

General

Standards			IEC/EN 60947, VDE 0660
Protection against direct contact			Finger and back-of-hand proof to VDE 0106 part 100
Climatic proofing			Damp heat, constant, to IEC 60068-2-78 Damp heat, cyclic, to IEC 60068-2-30
Mechanical shock resistance (10 ms half-sinusoidal shock) according to IEC 60068-2-27		g	20 (half-sinusoidal shock 20 ms)
Safe isolation to EN 61140			
Between auxiliary contacts and main contacts		V AC	500
between the auxiliary contacts		V AC	300
Weight		kg	1.05
Mounting position			Vertical and 90° in all directions  With XFI earth-fault release: - NZM1, N1, NZM2, N2: vertical and 90° in all directions with plug-in unit - NZM1, N1, NZM2, N2: vertical, 90° right/left with withdrawable unit: - NZM3, N3: vertical, 90° left - NZM4, N4: vertical with remote operator: - NZM2, N(S)2, NZM3, N(S)3, NZM4, N(S)4: vertical and 90° in all directions
Direction of incoming supply			as required
Degree of protection			

Device			In the area of the HMI devices: IP20 (basic protection type)
Enclosures			with insulating surround: IP40with door coupling rotary handle: IP66
Terminations			Tunnel terminal: IP10 Phase isolator and band terminal: IP00

Circuit-breakers

Rated current = rated uninterrupted current	$I_n = I_u$	A	160
Rated surge voltage invariability	U_{imp}		
Main contacts		V	6000
Auxiliary contacts		V	6000
Rated operational voltage	U_e	V AC	690
Overvoltage category/pollution degree			III/3
Rated insulation voltage	U_i	V	690
Use in unearthed supply systems		V	≦ 690

Switching capacity

Rated short-circuit making capacity	I_{cm}		
240 V 50/60 Hz	I_{cm}	kA	121
400/415 V 50/60 Hz	I_{cm}	kA	76
440 V 50/60 Hz	I_{cm}	kA	63
525 V 50/60 Hz	I_{cm}	kA	24
690 V 50/60 H	Ic	kA	14
Rated short-circuit breaking capacity I_{cn}	I_{cn}		
Icu to IEC/EN 60947 test cycle O-t-CO	Icu	kA	
240 V 50/60 Hz	I_{cu}	kA	55
400/415 V 50 Hz	I_{cu}	kA	36
440 V 50/60 Hz	I_{cu}	kA	30
525 V 50/60 Hz	I_{cu}	kA	12
690 V 50/60 Hz	I_{cu}	kA	8
Ics to IEC/EN 60947 test cycle O-t-CO-t-CO	Ics	kA	
230 V 50/60 Hz	I_{cs}	kA	55
400/415 V 50/60 Hz	I_{cs}	kA	36
440 V 50/60 Hz	I_{cs}	kA	22.5
525 V 50/60 Hz	I_{cs}	kA	6
690 V 50/60 Hz	I_{cs}	kA	4
			Maximum back-up fuse, if the expected short-circuit currents at the installation location exceed the switching capacity of the circuit-breaker.
Utilization category to IEC/EN 60947-2			A
Rated making and breaking capacity			
Rated operational current	I_e	A	
AC-1			
380 V 400 V	I_e	A	160
415 V	I_e	A	125
690 V	I_e	A	160
AC--3			
380 V 400 V	I_e	A	160
415 V	I_e	A	160
660 V 690 V	I_e	A	160
Lifespan, mechanical	Operations		20000
Lifespan, electrical			
AC-1			
400 V 50/60 Hz	Operations		10000
415 V 50/60 Hz	Operations		10000
690 V 50/60 Hz	Operations		7500
AC-2, AC-3			
415 V 50/60 Hz	Operations		7500

Max. operating frequency		Ops/h	120
Total break time at short-circuit		ms	< 10

Terminal capacity

Standard equipment			Box terminal
Round copper conductor			
Box terminal			
Solid		mm^2	1 x (10 - 16) 2 x (6 - 16)
Stranded		mm^2	1 x (25 - 70) 2 x 25
Tunnel terminal			
Solid		mm^2	1 x (16 - 95)
Stranded			
Stranded		mm^2	1 x (25 - 95)
Bolt terminal and rear-side connection			
Direct on the switch			
Solid		mm^2	1 x (10 - 16) 2 x (6 - 16)
Stranded		mm^2	1 x (25 - 70) 2 x 25
Al conductors, Cu cable			
Tunnel terminal			
Solid		mm^2	1 x 16
Stranded			
Stranded		mm^2	1 x (25 - 95)
Cu strip (number of segments x width x segment thickness)			
Box terminal			
	min.	mm	2 x 9 x 0.8
	max.	mm	9 x 9 x 0.8
Copper busbar (width x thickness)	mm		
Bolt terminal and rear-side connection			
Screw connection			M8
Direct on the switch			
	min.	mm	12 x 5
	max.	mm	16 x 5
Control cables			
		mm^2	1 x (0.75 - 2.5) 2 x (0.75 - 1.5)

Design verification as per IEC/EN 61439

Technical data for design verification			
Rated operational current for specified heat dissipation	I_n	A	160
Equipment heat dissipation, current-dependent	P_{vid}	W	36.096
IEC/EN 61439 design verification			
10.2 Strength of materials and parts			
10.2.2 Corrosion resistance			Meets the product standard's requirements.
10.2.3.1 Verification of thermal stability of enclosures			Meets the product standard's requirements.
10.2.3.2 Verification of resistance of insulating materials to normal heat			Meets the product standard's requirements.
10.2.3.3 Verification of resistance of insulating materials to abnormal heat and fire due to internal electric effects			Meets the product standard's requirements.
10.2.4 Resistance to ultra-violet (UV) radiation			Meets the product standard's requirements.
10.2.5 Lifting			Does not apply, since the entire switchgear needs to be evaluated.
10.2.6 Mechanical impact			Does not apply, since the entire switchgear needs to be evaluated.
10.2.7 Inscriptions			Meets the product standard's requirements.
10.3 Degree of protection of ASSEMBLIES			Does not apply, since the entire switchgear needs to be evaluated.
10.4 Clearances and creepage distances			Meets the product standard's requirements.
10.5 Protection against electric shock			Does not apply, since the entire switchgear needs to be evaluated.

10.6 Incorporation of switching devices and components			Does not apply, since the entire switchgear needs to be evaluated.
10.7 Internal electrical circuits and connections			Is the panel builder's responsibility.
10.8 Connections for external conductors			Is the panel builder's responsibility.
10.9 Insulation properties			
10.9.2 Power-frequency electric strength			Is the panel builder's responsibility.
10.9.3 Impulse withstand voltage			Is the panel builder's responsibility.
10.9.4 Testing of enclosures made of insulating material			Is the panel builder's responsibility.
10.10 Temperature rise			The panel builder is responsible for the temperature rise calculation. Eaton will provide heat dissipation data for the devices.
10.11 Short-circuit rating			Is the panel builder's responsibility. The specifications for the switchgear must be observed.
10.12 Electromagnetic compatibility			Is the panel builder's responsibility. The specifications for the switchgear must be observed.
10.13 Mechanical function			The device meets the requirements, provided the information in the instruction leaflet (IL) is observed.

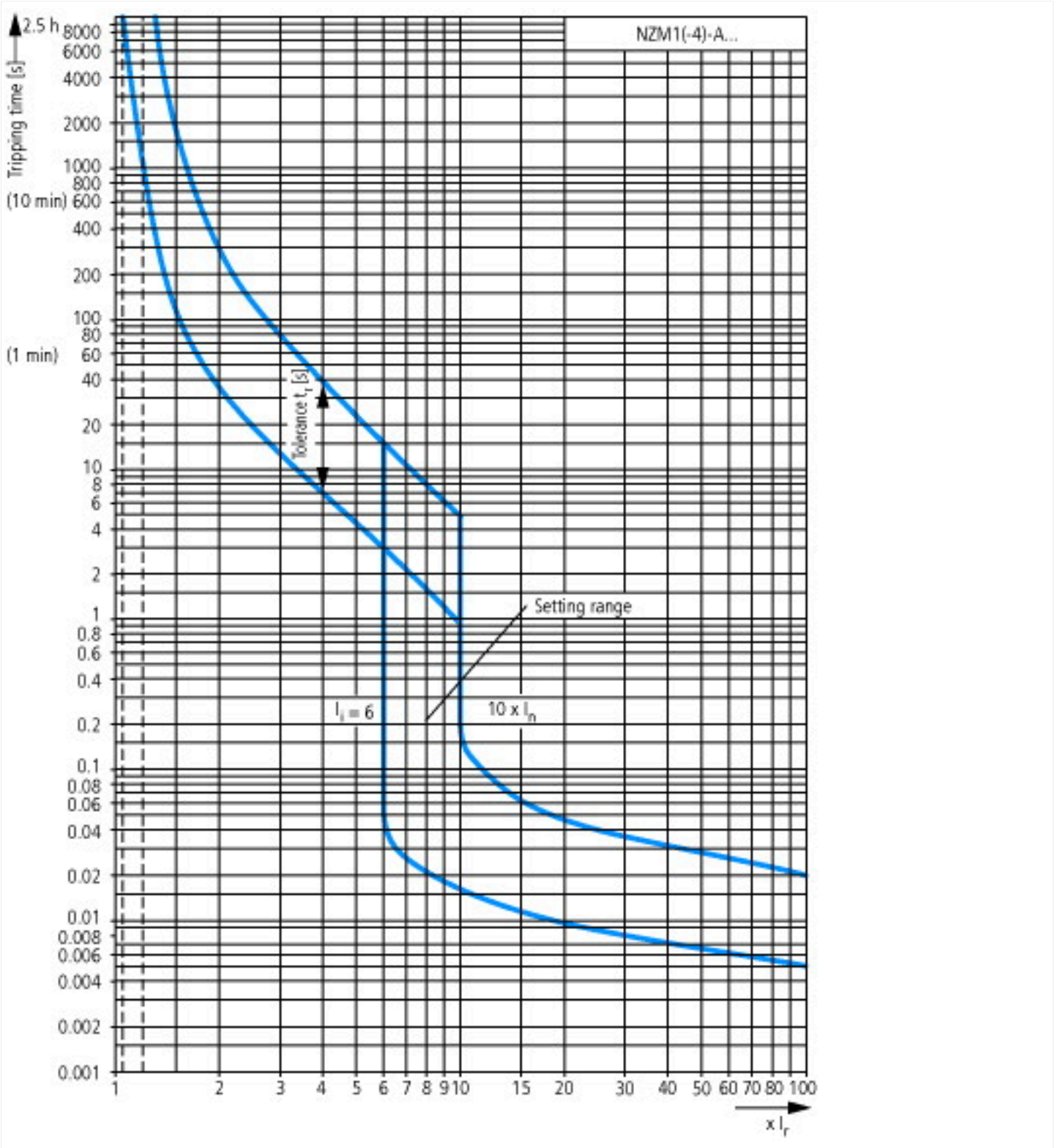
Technical data ETIM 7.0

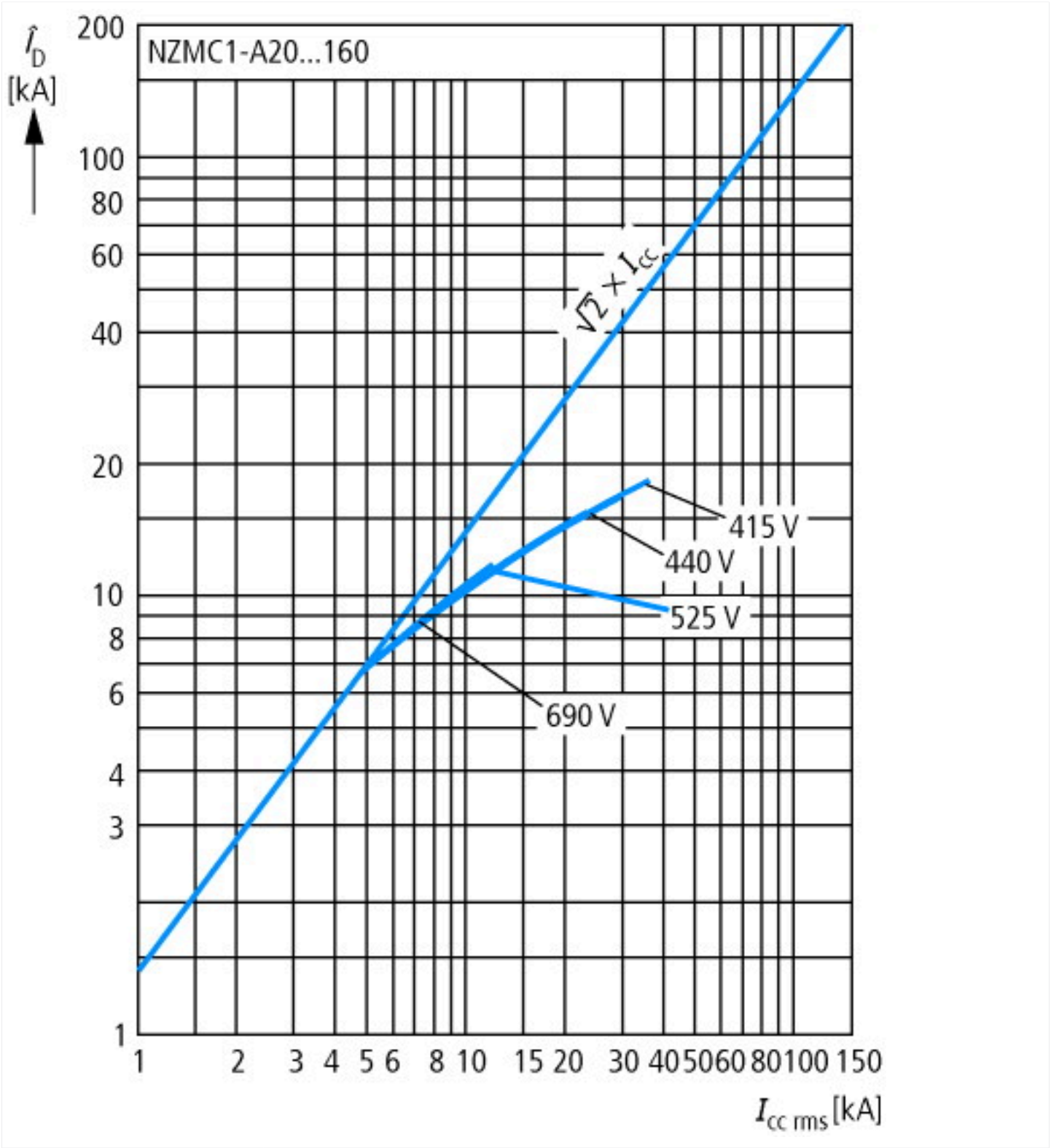
Low-voltage industrial components (EG000017) / Power circuit-breaker for trafo/generator/installation protection (EC000228)

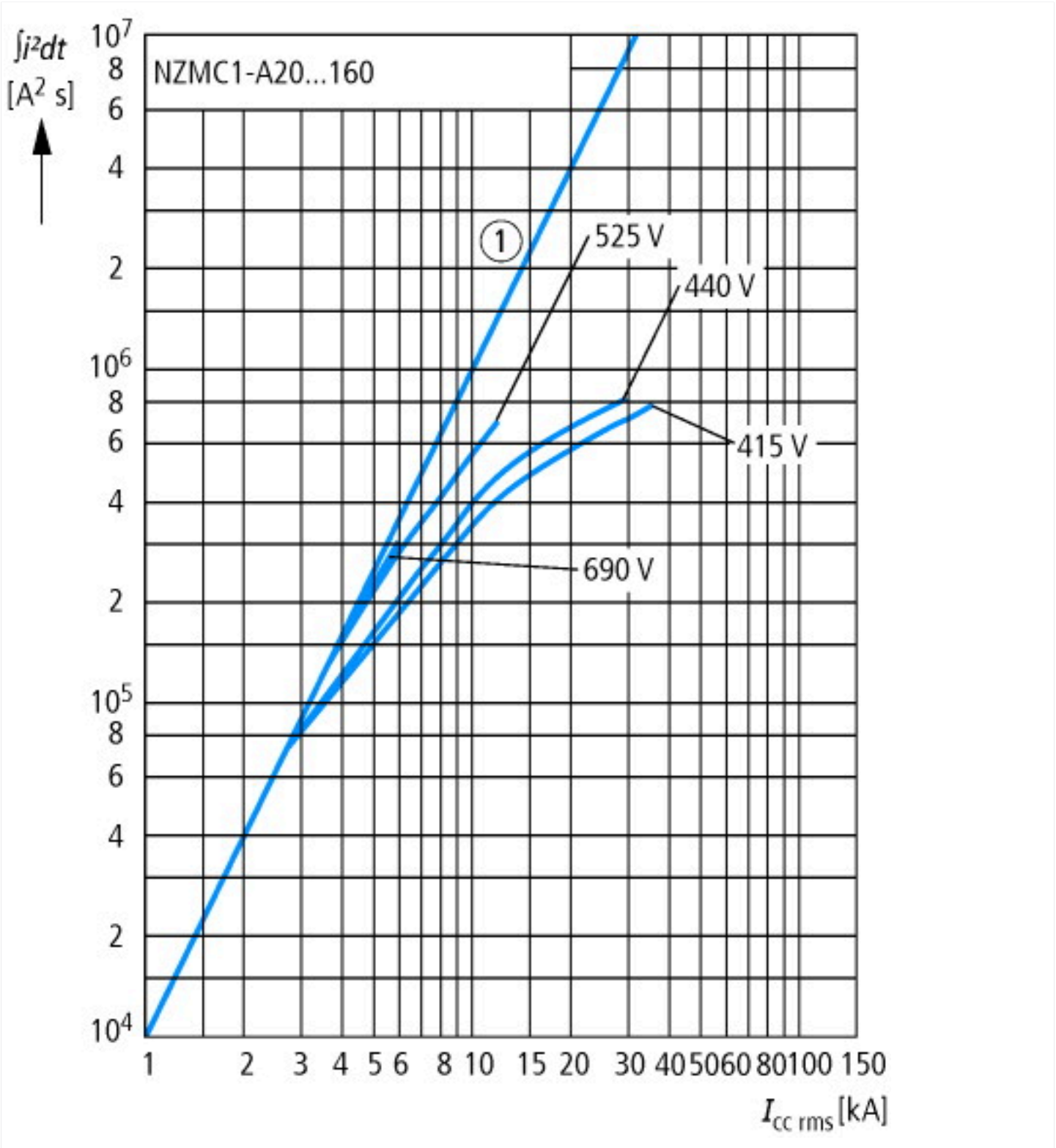
Electric engineering, automation, process control engineering / Low-voltage switch technology / Circuit breaker (LV < 1 kV) / Circuit breaker for power transformer, generator and system protection (ecl@ss10.0.1-27-37-04-09 [AJZ716013])

Rated permanent current Iu		A	160
Rated voltage		V	690 - 690
Rated short-circuit breaking capacity Icu at 400 V, 50 Hz		kA	36
Overload release current setting		A	125 - 160
Adjustment range short-term delayed short-circuit release		A	0 - 0
Adjustment range undelayed short-circuit release		A	960 - 1600
Integrated earth fault protection			No
Type of electrical connection of main circuit			Frame clamp
Device construction			Built-in device fixed built-in technique
Suitable for DIN rail (top hat rail) mounting			No
DIN rail (top hat rail) mounting optional			Yes
Number of auxiliary contacts as normally closed contact			0
Number of auxiliary contacts as normally open contact			0
Number of auxiliary contacts as change-over contact			0
With switched-off indicator			No
With under voltage release			No
Number of poles			3
Position of connection for main current circuit			Front side
Type of control element			Rocker lever
Complete device with protection unit			Yes
Motor drive integrated			No
Motor drive optional			No
Degree of protection (IP)			IP20

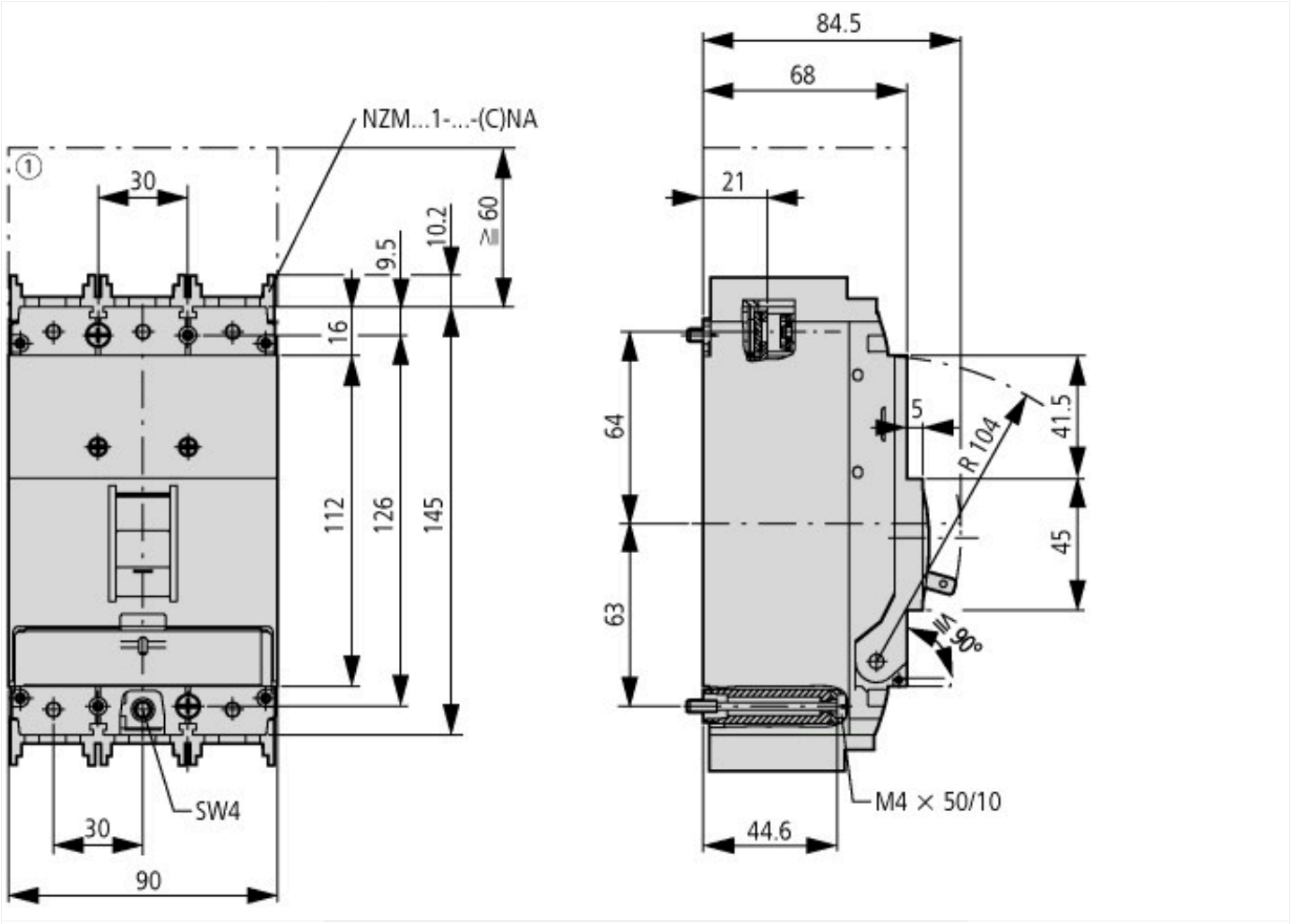
Characteristics



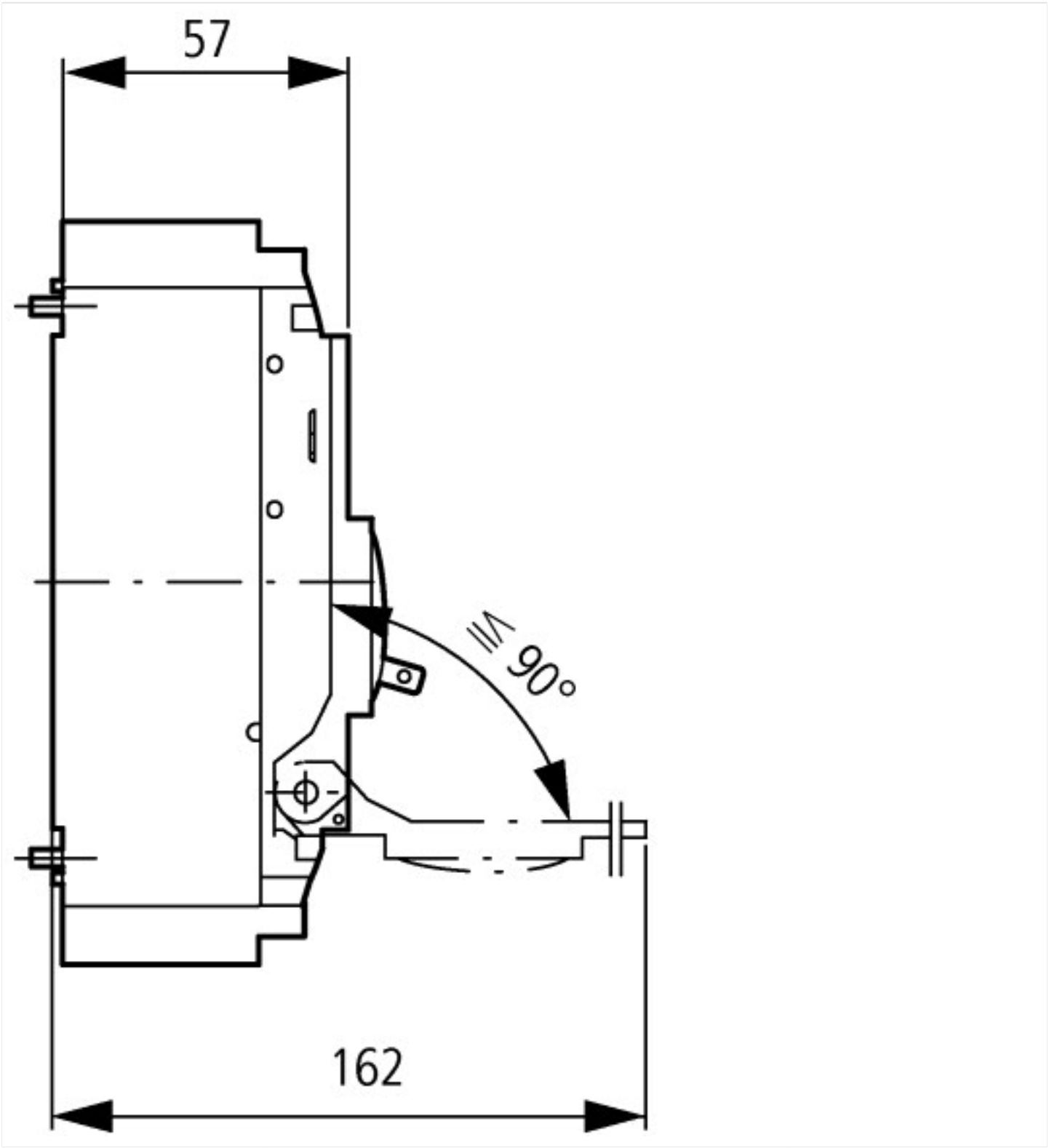

NZMC1-A20...160
$\hat{I}_D$ [kA]
200
100
80
60
40
20
10
8
6
4
3
1
$\sqrt{2} \times I_{cc}$
415 V
440 V
525 V
690 V
1
2
3
4
5
6
8
10
15
20
30
40
50
60
80
100
150
$I_{cc\ rms}$ [kA]


∫i²dt
[A² s]
NZMC1-A20...160
1
525 V
440 V
415 V
690 V
10⁷
8
6
4
2
10⁶
8
6
4
2
10⁵
8
6
4
2
10⁴
1
2
3
4
5
6
8
10
15
20
30
40
50
60
80
100
150
I cc rms [kA]

Dimensions



① Blow out area, minimum clearance to other parts



Additional product information (links)

IL01203007Z circuit-breaker LZM.1(-4), switch-disconnector LN1	
IL01203007Z circuit-breaker LZM.1(-4), switch-disconnector LN1	ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL01203007Z2017_05.pdf